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SUPERFUND RECORDS

March 7, 1989

MEMORANDUM

SUBJECT: Shenandoah Stables Dioxin Removal Data Summary

FROM: William J. Keffer, Senior Engineering Advisor, ENSV

TO: Charles P. Hensley, Chief, EP&R/ENSV

Removal of contamination at the subject site has been completed to health agency and EPA-approved action levels as described in the original Action Memo. A total of 2660 bags of contaminated soil and debris containing and estimated 3325 to 3990 bank yards of contaminated soil have been removed from 29,513 square feet of interior and exterior space. In addition to the contaminated material secured on site, 13 approx. 20-yard lots of decontaminated debris, as described below, have been disposed of as solid waste.

LOT A - brush and cut trees from hot zone - T4940002 - 0.4 ND ppb

LOT B - interior structural wood - T4940003 - 0.4 ND ppb.

LOT C - Skelgas tanks and metal heater - T3940004 - 0.4 ND pg/cm2

LOT D - interior structural wood - T4940007 - 0.3 ND ppb

LOT H - interior structural wood - T4940013 - 0.3 ND ppb

LOT I - interior structural wood - T4940014 - 0.3 ND ppb

LOT K - interior structural wood - T3940008 - 0.3 ND ppb

LOT L - interior metal fixtures - T4940018 - 0.4 ND pg/cm2

LOT M - interior metal fixtures - T3940013 - 0.4 ND pg/cm2

Four lots of interior wood which had been treated with penta was deconned to <1.0 ppb and was bundled and stacked on site in the clean zone for future use by the owner.

Verification data for the interior and exterior soil unit areas which had been shown to be contaminated by the original 95% UCL site data are listed below. During excavation it was necessary

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to restructure some of the unit areas to accomplish a cost effective removal. A complete map of the final unit areas used is attached.

SECTION NUMBER	AREA FT^2	EXC. DEPTH INCHES	95%UCL	SAMPLE NO. SAMPLE NO.	TCDD CONC.
002	4089	12	0.3 U	T2940020	0.3 U ppb
				T2940021	0.3 U ppb
				T2940022	0.3 U ppb
002		12 to 24 Core	0.3 U	T4940043	0.3 U ppb
				T4940044	0.3 U ppb
				T4940045	0.3 U ppb
003	4089	12	0.3 U	T2940030	0.3 U ppb
				T2940031	0.3 U ppb
				T2940032	0.3 U ppb
003		12 to 24 Core	0.683	T4940046	1.647 ppb
				T4940047	0.354 ppb
				T4940048	0.3 U ppb
				T4940049	0.3 U ppb
				T4940050	0.3 U ppb
				T4940051	0.3 U ppb
				T4940052	0.396 ppb
				T4940053	0.3 U ppb
				T4940054	0.879 ppb
				T4940055	0.3 U ppb
				T4940056	0.3 U ppb
				T4940057	0.3 U ppb
005	4089	12	0.444	T4940061	0.302 ppb
				T4940062	0.305 ppb
				T4940063	0.585 ppb
				T4940064	0.3 U ppb
				T4940065	0.3 U ppb
				T4940066	0.3 U ppb
005		12 to 24 Core	0.3 U	T4940067	0.3 U ppb
				T4940068	0.3 U ppb
				T4940069	0.3 U ppb
006	4325	12	0.378	T4940028	0.3 U ppb
				T4940029	0.3 U ppb
				T4940030	0.450 ppb
				T4940031	0.3 U ppb
				T4940032	0.3 U ppb
				T4940033	0.3 U ppb
006		12 to 24 Core	0.3 U	T2940060	0.3 U ppb
				T2940061	0.3 U ppb
				T2940062	0.3 U ppb
007	2512	12 S1/2	0.711	T4940070	0.615 ppb
				T4940071	0.3 U ppb
				T4940072	0.3 U ppb
	2000	24 N1/2	0.3 U	T4940079	0.3 U ppb

				T4940080	0.3 U ppb
				T4940081	0.3 U ppb
	2512	12to24 S1/2	0.3 U	T4940082	0.3 U ppb
				T4940083	0.3 U ppb
				T4940084	0.3 U ppb
015	4225	9	0.3 U	T2940153	0.3 U ppb
				T2940154	0.3 U ppb
				T2940155	0.3 U ppb
016	4225	6	0.31	T2940160	0.3 U ppb
				T2940161	0.306 ppb
				T2940162	0.3 U ppb
018	1500	9	0.3 U	T2940183	0.3 U ppb
				T2940184	0.3 U ppb
				T2940185	0.3 U ppb
024	1400	6	0.845	T2940241	0.717 ppb
				T2940242	0.3 U ppb
025	5500	6	0.3 U	T2940250	0.3 U ppb
				T2940251	0.3 U ppb
				T2940252	0.3 U ppb
026	1875	6	0.3 U	T2940260	0.3 U ppb
				T2940261	0.3 U ppb
				T2940262	0.3 U ppb
027	1875	12	0.378	T2940273	0.3 U ppb
				T2940274	0.335 ppb
				T2940275	0.356 ppb
031	3750	12	3.212	T2940313	2.590 ppb
				T2940314	0.461 ppb
				T2940315	0.834 ppb
032	3750	12	1.929	T2940323	0.3 U ppb
				T2940324	1.093 ppb
				T2940325	1.440 ppb
042	1200	24	0.489	T2940423	0.3 U ppb
				T2940424	0.340 ppb
				T2940425	0.446 ppb
043	2800	12	0.3 U	T2940430	0.3 U ppb
				T2940431	0.3 U ppb
				T2940432	0.3 U ppb
048	2000	21	1.95	T2940480	1.721 ppb
				T2940481	1.107 ppb
				T2940482	0.948 ppb
049	2000	24	5.625	T2940493	1.891 ppb
				T2940494	2.507 ppb
				T2940495	4.780 ppb
050	2200	24	1.287	T2940503	1.055 ppb
				T2940504	0.3 U ppb
				T2940505	0.3 U ppb
051	5625	21	0.994	T2940513	0.837 ppb
				T2940514	0.3 U ppb
				T2940515	0.375 ppb
052	2800	21	3.522	T2940523	2.766 ppb

				T2940524	0.3 U ppb
				T2940525	0.3 U ppb
053	1875	15	0.360	T2940533	0.346 ppb
				T2940534	0.3 U ppb
				T2940535	0.3 U ppb
057	4089	12	0.752	T2940560	0.3 U ppb
				T2940561	0.3 U ppb
				T2940562	1.322 ppb
				T2940550	0.3 U ppb
				T2940551	0.3 U ppb
				T2940552	0.989 ppb
057		12 to 24	0.731	T4940040	0.3 U ppb
		Core		T4940041	0.3 U ppb
				T4940042	0.630 ppb

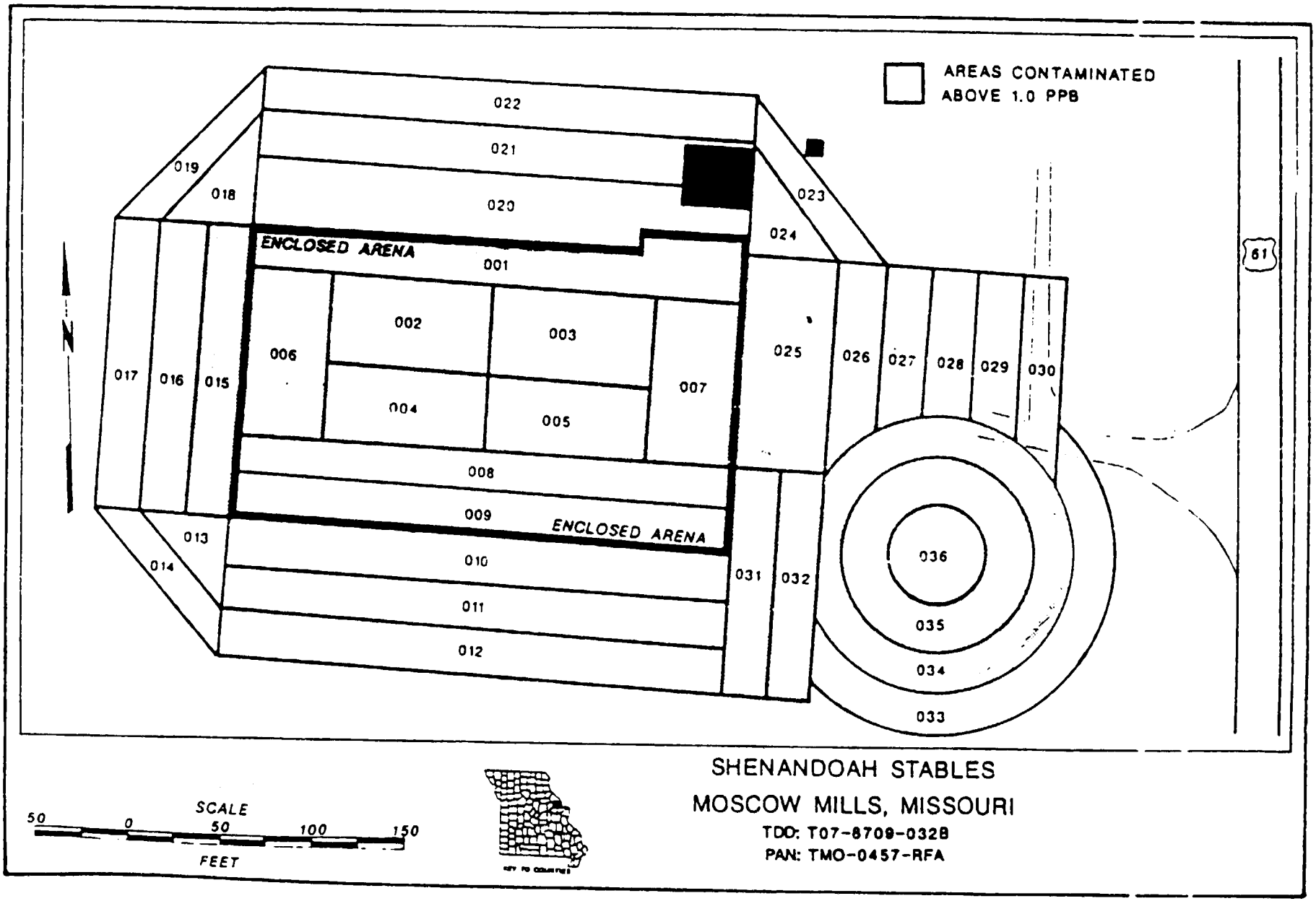
Additional samples were collected to verify that portions of the structures were appropriately decontaminated. These data are provided below:

tack room walls - T3940010 - 0.3 U ppb
tack room floor - T3940012 - 0.3 U ppb
arena rafters east 1/2 - T4940087 - 0.3 U ppb
arena rafters west 1/2 - T4940096 - 0.3 U ppb
arena walls south side - T4940093 - 0.3 U ppb
arena walls north side - T4940094 - 0.3 U ppb

The verification of health agency action levels for ambient air, structures, and soil unit areas required analytical resource commitments as listed below:

soil samples from unit areas -	208
vacuum and wood -	22
decon verification wipes -	47
blanks and spikes non-air-	205
ambient air samples -	85
ambient air blanks and spikes -	37
total samples for site removal =	604

cc: Glenn Curtis, SPFD/WSTM
Linda James, MDNR
Jim Long, MDNR
Cheryle Micinski, CNSL



SAMPLING LOCATION MAP

ecology and environment, inc.